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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/741,827	12/19/2003	Robert N. Phelps	2003P14534US	6172

7590 10/28/2009
Siemens Corporation
Intellectual Property Department
170 Wood Avenue South
Iselin, NJ 08830

EXAMINER

LAMPRECHT, JOEL

ART UNIT	PAPER NUMBER
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3737

MAIL DATE	DELIVERY MODE
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10/28/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/741,827	Applicant(s) PHELPS ET AL.	
	Examiner JOEL M. LAMPRECHT	Art Unit 3737	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 June 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1, 2, 4-20, 22-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 2, 4-20 and 22-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>7/14/09</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1, 2, 4-8, 11, 12, 14-20, and 22 are rejected under 35 U.S.C. 102(b) as being unpatentable over Leavitt et al (US 6,491,634 B1). Leavitt et al disclose an ultrasound probe for removable connection with an imaging system including a releasable connection to the transducer and an analog-to-digital converter (Figure 1-5, Col 2 Line 50-Col 4 Line 58) connected between the ultrasound transducer and the connection which is separate from the imaging system housing (Figure 2, Col 3 Line 60-Col 5 Line 14). The ultrasound transducer has multiple elements and multiple analog to digital converters connected to the transducer elements, and the probe has a digital

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processor for partial beamforming connected between the analog to digital converter and the outputs (Col 3 Line 60-Col 5 Line 14), a multiplexer for signal consolidation within the sub-beamformer (Figure 5), and a bypass system for transmitting analog signals to the main processing unit via the use of analog beamforming and a T/R switch (Col 3 Line 60-Col 4 Line 20, Col 10 Line 65-Col 11 Line 15). Leavitt et al also disclose the use of serialization components for creating binary stores of data (Col 6 Line 55-Col 7 Line 8, Col 7 Line 30- Col 9 Line 10).

Regarding the disclosure of a connector "housing", it has been upheld that changes in shape, portability, and separability (In re Dulberg, 289 F.2d 522, 523, 129 USPQ 348, 349 (CCPA 1961), In re Dailey, 357 F.2d 669, 149 USPQ 47 (CCPA 1966), In re Lindberg, 194 F.2d 732, 93 USPQ 23 (CCPA 1952) do not render an application as novel over the prior art. In the instant case the implementation of "cables" would constitute only the electrical connection which is disclosed in Figure 2 of Leavitt et al, additionally, the portions of the housing around the transducer and the a/d converter/connector can be considered separate from the imaging system housing as they are electrically connected in the Figures as separate portions of the schematic.

Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Leavitt et al. Leavitt et al discloses all that is listed above, but fails to mention the use of cables with constant length and the same impedance. It would have been obvious to one of ordinary skill in the art at the time of the invention to have used cables with constant length and impedance as cables with the same length and impedance will result in consistent signal in an electronic system.

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Claims 10, 13, are rejected under 35 U.S.C. 103(a) as being unpatentable over Leavitt et al (US 6,491,634 B1) in view of Pflugrath et al (US 6,102,863). Leavitt et al discloses all that is listed above, but fails to disclose the use of a demultiplexing unit for demuxing the data acquired by the transducer elements. Attention is then directed to the secondary reference by Pflugrath et al which discloses the use of such a unit in a hand-held portable ultrasound unit (Figure 1-3, 5, Col 3 Line 31-Col 4 Line 65) including a multiplexer in the transducer probe and a demuxing unit also contained within the transducer/connector housing. It would have been obvious to one of ordinary skill in the art at the time of the invention to have used the demuxing units described by Pflugrath et al in the system and methods of Leavitt et al for the purpose of splitting the digital signal back into separate elements for processing by the main processing unit.

Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Leavitt et al (US 6,491,634 B1) in view of Pflugrath et al (US 6,102,863) and in further view of Ramirez (US 5,627,536). Leavitt et al in view of Pflugrath et al (US 6,102,863) disclose all that is listed above, but fail to disclose time division multiplexing of a signal before a/d conversion and digital demultiplexing after converting. Attention is directed to the teaching reference to Ramirez which discloses an analog multiplexer a/d converter and digital demultiplexer for the purpose of facilitating processing of a plurality of analog inputs in a time-shared manner. It would have been obvious to one of ordinary skill in the art at the time of the invention to have utilized such a setup with a time-division multiplexing unit to provide for processing of a number of input analog signals received by the ultrasound system as one time-division string into digital outputs.

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Leavitt et al (US 6,491,634 B1) in view of Little et al (US 2004/0133110 A1). Leavitt et al discloses all that is listed above except for the disclosure of a switch for bypassing analog signals to the electrical outputs. Attention is directed to the secondary reference to Little et al which discloses an a/d converter as well as a continuous wave mode selectable through a switch to toggle processing modes (0014-0018). It would have been obvious to one of ordinary skill in the art at the time of the invention to have utilized the processing modes of Little et al with the device of Leavitt et al for the purpose of allowing of a continuous wave mode of transmission/reception of signals.

Response to Arguments

Applicant's arguments filed 6/25/09 have been fully considered but they are not persuasive. Regarding the argument that Leavitt et al does not disclose a "cable" between the transducer and A/D unit, Leavitt et al discloses that electrical connections can be : "an electrical connection (electronic) having one or more wires" A cable would be a connection element with more than one wire, as the instant claim set does not specifically mention that a coaxial cable is required between elements. Regarding claim 11 (and claim 20), the instant language requires that a transducer probe houses elements, a connector housing at least partially houses an a/d converter which is connectable and detachable from the system housing (the processing system) and a cable that connects the transducer to the connector. There is nothing requiring the transducer housing and connector housing to be separate elements of the system with respect to the housing containing those elements.

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Regarding the dependent arguments, Claim 5 recites cables, which again are not specifically coaxial cables but simply "cables", that is, 2 or more wires. Claim 8 recites a processor between a/d converter and outputs, See figure 2 for the digital beamformer before the electrical outputs (218). In Claim 9, attention is directed to Little et al for the disclosure of the T/R switch. Regarding claim 13, there is still not recitation that the connector housing and probe housing are required to be completely separate from one-another, rather the connector housing needs to be connectable and detachable from the system housing (See claim 11). Throughout these arguments it is apparent that a difference of opinion regarding what constitutes a "connector housing", "probe housing" or "probe assembly" within the art, and how those elements could either be integrated or connected while still maintaining their own identity as components of an ultrasound system, especially with regard to the statement "the housing spaced from the ultrasound transducer". *The housing of the art of record to Leavitt et al includes housing elements which are electrically spaced from the transducer elements at least with regard to the instant claim language.*

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not

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mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JOEL M. LAMPRECHT whose telephone number is (571)272-3250. The examiner can normally be reached on 8:30-5:00 Monday - Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian L. Casler can be reached on (571) 272-4956. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/BRIAN CASLER/
Supervisory Patent Examiner, Art
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